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Designing a Fun English Vocabulary Card Application as a Means of Learning English Vocabulary for Elementary School Students

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Abstract

English has been globally used for communication and studied by almost all countries. Therefore, understanding and being able to communicate in English is crucial. A lot of English learning is currently delivered using the lecture method, but there is no medium for learning English vocabulary in an application. This study aims to create a Fun English Vocabulary Card game to improve children's English vocabulary. To design the learning model, the design of use case and activity diagrams was utilized. Based on the pre-test and post-test results, this game significantly increased children's English vocabulary. The average pre-test score was 43.625, and the average post-test score was 95, which indicates that the educational game application could improve users' knowledge and understanding of English vocabulary.

Keywords: *fun English vocabulary card, educational game, pre-test, post-test*

1. Introduction

A language is a communication tool used by humans to interact socially. Given the importance of language, one must learn a language to communicate. A language is a form of communication in which a person's thoughts and feelings can be symbolized to convey meaning to others [1]. Language cannot be separated from the vocabulary as it is an essential aspect of language skills. The more vocabulary mastered, the more skillful people will be in the language. Vocabulary is a component containing all information related to using words in a language [2]. Vocabulary can improve writing, speaking and reading skills.

Nowadays, English is the global communication language that almost all countries learn and use in education or business fields. Accordingly, there needs to be an understanding and the ability to use this language. Beginner English learners need vocabulary because, with adequate vocabulary mastery, they will understand the language better. Learning a foreign language is a tedious and challenging endeavor and sometimes frustrating. It attempts to form and build new conditions within a person to interact and communicate with foreign language owners [3]. So far, most English learning is delivered using the lecture method, causing students to easily get bored and find it difficult to learn the language. The use of instructional media is still limited, for example, wall pictures containing English vocabulary. There is no learning media application for English vocabulary. The use of learning media at the learning orientation stage will significantly enhance the effectiveness of the learning process, as well as the delivery of lesson messages and missions [4].

One of the media in language learning is picture cards. According to [5-7], picture card media is effective in improving English learning achievement. Through such media, students can learn English fun and unconsciously while playing. The current rapid development of technology affects the learning process in schools and the materials in teaching and learning, one of which is through educational games. Humans learn everything visually-verbally faster, so games become excellent if involved in the educational process [8-10]. Therefore this paper presents an English educational game application to improve the skill in English, especially for English new learners.

The remainder of this paper is organized as follows. Section II provides the methodology. Section III presents the experimental results. Section IV discusses the results and finally, Section V gives the conclusion.

2. Method

2.1 System Planning

Design is a part of a software development method carried out after the needs analysis stage to provide a detailed picture. System design can be drawing and sketching or arranging several elements into one complete and functional unit.

2.1.1 Design of Use Case and Activity Diagrams

A use case diagram is used to briefly describe who uses the system and what this user can do. This diagram does not explain the utilization of a use case in detail but solely provides a brief description of the relationship between the use case and actors [11]. Meanwhile, an activity diagram describes the workflow or activities of a system.

a. Use Case Diagram

A use case diagram in the educational game "Fun English Vocabulary Card" has one actor and seven use cases, as displayed in Figure 1.

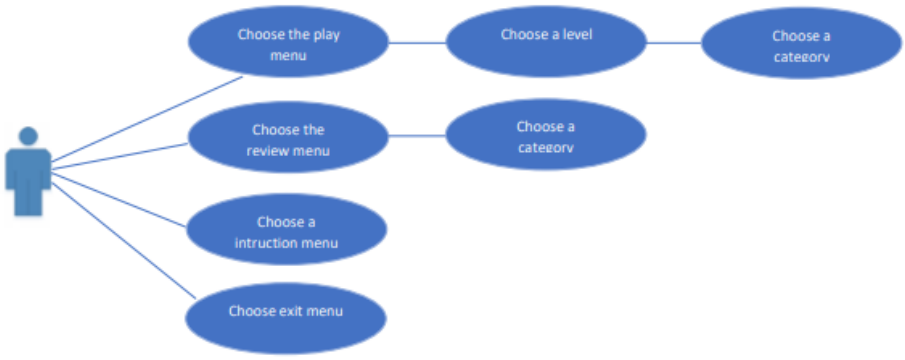

Figure 1. Use Case Diagram

b. Activity Diagram

An activity diagram describes various activity flows in the software designed, how each flow starts, the decisions that may occur, and how the flow ends [12]. The following is an activity diagram in the application.

1. Activity Diagram Menu Play

   The activity diagram menu play in the educational game "Fun English Vocabulary Card" is depicted in Figure 2.

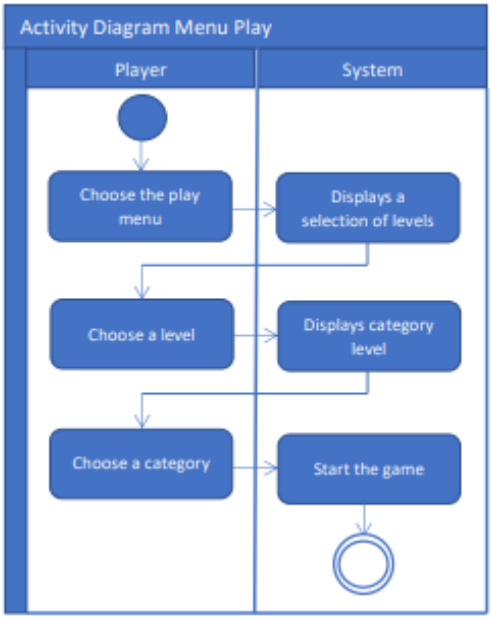

Figure 2. Activity Diagram Menu Play

2. Activity Diagram Menu Learn

Figure 3 presents the activity diagram menu learn in the educational game "Fun English Vocabulary Card".

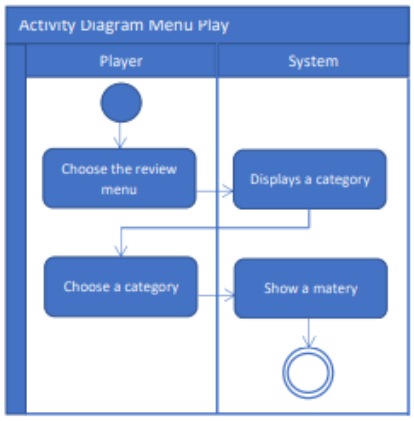

Figure 3. Activity Diagram Menu Learn

3. Activity Diagram Menu Instructions

Figure 4 demonstrates the activity diagram menu instructions in the educational game "Fun English Vocabulary Card".

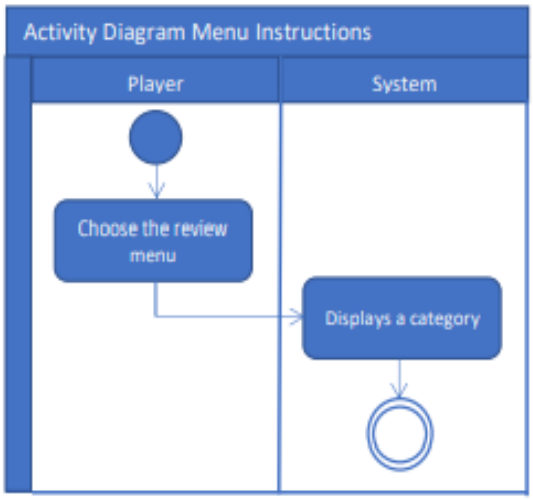

Figure 4. Activity Diagram Menu Instructions

4. Activity Diagram Menu Exit

The activity diagram menu exit in the educational game "Fun English Vocabulary Card" is displayed in Figure 5.

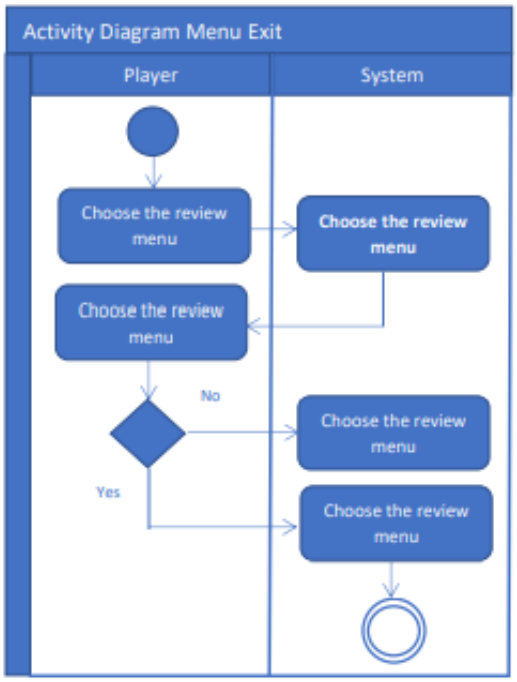

Figure 5. Activity Diagram Menu Exit

3. Results

3.1 Testing Results

The pre-test and post-test results are presented in the following table.

Table 1. The pre-test and post-test results

Student Number	Class	Age (Year)	Pre-test Score	Post-test Score
1	I	6	25	80
2	IV	9	17.5	95
3	IV	9	60	100
4	III	8	35	100
5	II	7	45	90
6	III	8	22.5	87.5
7	V	10	50	82.5
8	IV	10	55	90
9	VI	11	55	100
10	V	10	60	100
11	II	6	37.5	97.5
12	V	10	45	100
13	II	7	27.5	90
14	VI	11	55	95
15	V	10	45	100
16	V	10	55	100
17	IV	9	50	100
18	III	8	40	100
19	VI	11	42.5	92.5
20	IV	9	50	100
Average scores			43.625	95

Table 1 and Figure 6 demonstrate that the average post-test score is greater than the pre-test score. It proves that children's English vocabulary increases after using the educational game "Fun English Vocabulary Card".

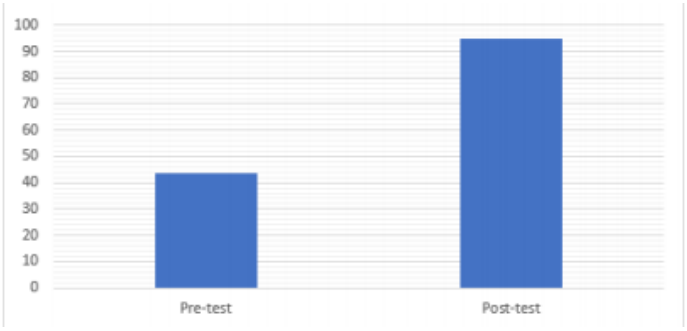

Figure 6. Graph of pre-test and post-test average scores

In addition to using a table and a graph, the authors also processed data using the paired samples t-test using SPSS. It was used as a comparative test of two paired variables. Paired samples are the same subject but experience different treatments. After the authors processed the pre-test and post-test scores with the paired samples t-test, the output display was obtained, as shown in Figure 7.

Paired Sample Statistics

Mean	N	Std Deviation	Std Error Mean
43.625 (Pretest)	20	12.656	2.83
95 (Postest)	20	6.387	1.42

Paired Sample Correlations

N	Correlation	Sig.
20	0.427	0.06

Paired Sample Test

Paired Differences					t	α	Sig.
Mean	Std Deviation	Std Error Mean	Lower	Upper			(2-tailed)
-51.37	11.48	2.547	-56.74	-46.0	-20.03	0.05	0.00

Figure 7. The results of the t-test output using SPSS

Interpretation of output results:

1. The first part (Paired samples statistics)
   The first part shows average scores of 43.625 for the pre-test and 95 for the post-test, showing an increase of 51.37 points. The standard deviation depicts the variation in each variable. These output results indicate a standard deviation of 12.656 for the pre-test and 6.387 for the post-test, and N shows the amount of data totaling 20.
2. The second part *(*Paired samples correlations*)*
   The second part displays the correlation results between the two variables producing the number of .427 with a significant value of .060, and N demonstrates the amount of data, amounting to 20 data.
3. The third part (Paired samples test) is interpreted as follows:
   a. Hypothesis
      H_0: The average pre-test and post-test scores are the same or insignificantly different.
      H_1: The average pre-test and post-test scores are not the same or significantly different.
   b. Level of confidence
      At the 95% confidence level, the alpha value is 5% or 0.05. Then, alpha = 0.05.
   c. Critical area
      To make a decision, a comparison method between significance and alpha values could be applied with the following conditions:
      - If the value of sig > 0.05, H_0 is accepted.
      - If the value of sig < 0.05, H_1 is accepted.
   d. Decision
      The significance value appearing in SPSS is 0.000; thus, 0.000 < 0.05 (H_0 is rejected, while H_1 is accepted).
   e. Conclusion
      With a 95% confidence level, the above decision shows a significant difference between the pre-test and post-test scores. The post-test results reveal that the

game “Fun English Vocabulary Card” can increase children’s knowledge and understanding of English vocabulary

4. Conclusion

This study presents an English educational game application to improve the skill in English (i.e., writing, speaking, and reading). The results on the pre-test and post-test scores using the paired samples t-test revealed the value of sig. (2-tailed) of 0.00 (<0.05), indicating a significant difference between the pre-test and post-test scores. The average pre-test score was 43.625, and the post-test average score was 95, signifying an increase of 51.37 points. The increase in the average score after using this game indicates that the built educational game application “Fun English Vocabulary Card” could improve users’ knowledge and understanding of English vocabulary.

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